

looking ahead

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TECHNICIANS AND SCHOLARS

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SCIENTIFIC MINDS and
EDUCATED MEN

the people of NPA

International Exchange of Technicians and Scholars

by Kenneth Holland

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ACCORDING TO ANNUAL surveys made by the Institute of International Education, more than 40,000 foreign nationals come to the United States each year as participants in educational exchange enterprises, and over 10,000 U. S. citizens go abroad on similar missions. Students, professors, doctors, trainees, and specialists travel abroad to achieve educational goals. The United States is now the nation that receives the largest number of scholars from abroad. In 1954-55 there were 34,232 foreign students in this country. This year the figure tops 37,000, over five times as many as were here ten years ago.

As U. S. participation in programs of educational exchange has increased since World War II, the need has arisen for extensive program planning, for precise definition of goals. To this end exchange program administrators have placed an increasing emphasis on research and statistics. With the entrance of the U. S. Government into the exchange field, a major development in post-war exchanges, a second need has arisen—for public understanding and support of international education; a public relations factor has been introduced into the administration of exchange programs.

Research

Writing in the "Handbook on International Study," Brewster Smith of the Social Science Research Council noted that, while students and scholars through centuries have crossed national boundaries to study abroad, it is only in this century that there have been organized programs of international education, programs established to advance explicit goals. The growth of organized programs has raised a number of questions about the goals and results of exchange. Mr. Smith has cited a few: "To what extent are stated goals being achieved? Are the results commensurate with the investment? How can planned exchange be conducted so as to realize program objec-

The Need for an Executive Reserve

In June 1954, an NPA Special Committee on Manpower Policy under the chairmanship of David J. Winton recommended immediate recruitment of a reserve force of civilian leaders who would be prepared to serve in Government and civil posts in the event of war mobilization. Officials from several Government agencies participated in the Committee's preliminary discussions.

This executive reserve has now been established. In February 1956, President Eisenhower authorized the Office of Defense Mobilization to enlist several thousand key civilian executives into a voluntary force of administrative talent and special knowhow.

NPA's Planning Pamphlet No. 86, "Needed: A Civilian Reserve," contains the Committee recommendations and a report by Helen Hill Miller.

LOOKING AHEAD has been expanded for this issue in order to present the complete text of the NPA Joint Statement on U. S. Government Participation in Cultural Exchange Programs. See pages 5-8.



tives more effectively? Or do these objectives themselves need scrutiny and reformulation in the light of experience?"

In a discussion of research in the field of international education Mr. Smith has maintained that such questions clearly call for a systematic scrutiny of the process of cross-cultural education, guided by the procedures of social sciences. Recently several large-scale programs of research and evaluation have been launched; these promise to throw considerable light on the exchange process and its effects. Noteworthy among current programs are those organized by the Evaluation Staff of the International Educational Exchange Service of the U. S. Department of State and by the Committee on Cross-Cultural Education of the Social Science Research Council.

A number of leads and findings have emerged from these investigations. Studies of specific groups have furnished information about the results of educational exchange, its effectiveness in achieving set goals. They have also told a great deal about the processes through which these effects were brought about. It is this, the processes of cross-cultural learning, which was the subject of a group of studies made by the Social Science Research Council Committee. It studied the adjustment in the United States of four groups of foreign students from four countries of contrasting culture—India, Mexico, Japan, and the Scandinavian lands; it made parallel studies of the readjustment of returned foreign students in these countries. After these intensive nationality studies, the Committee tried to discover just what factors in national background or in the American educational setting produce different outcomes. It was thus possible to identify several theoretical problems. In the second stage of the research program these problems were studied more systematically and with a sharper focus than was appropriate for the initial exploratory studies. Theoretically defined, the problems cut across nationality. One topic under investigation concerned the way in which adjustment to the United States is colored by differences in the national status which the foreign student, as "unofficial ambassador," is accorded and to which he aspires. The earlier work had highlighted this problem particularly in the instance of students from the Indian subcontinent. Redefined in theoretical terms, the problem becomes not one peculiar to any single cultural group but having relevance to the understanding of students from many newly nationalistic countries whose self-esteem is bound up with

high but as yet insecure national aspirations.

From a number of studies like this one of national status, in which limited problems are investigated in appropriate groups and settings, the Committee on Cross-Cultural Education of the Social Science Research Council has hoped that light could be thrown on the major processes that lead to the kinds of outcomes with which programs of educational exchange are concerned. On the basis of such knowledge gained from research, it should be possible to plan more effective exchange programs.

Goals

IN A RECENT analysis of the goals of foreign student programs the Committee on Educational Interchange Policy of the Institute of International Education argued that student exchange is no "psychological wonder drug" for world problems, no sure-fire weapon against the spread of communism. But exchange-of-persons programs do advance knowledge, the Policy Committee asserted. They are a positive long-range factor in better relations between the United States and other countries. Support for the interchange of scholars should be based upon such an honest evaluation of the results of these programs.

The primary purpose of any international educational exchange should be education, the Committee has concluded. This may seem an obvious point, but it is one often forgotten by enthusiasts for the exchange movement. After analyzing the goals of students and their sponsors the Committee on Educational Interchange Policy wrote, "It is apparent that the sponsoring groups emphasize first broad social goals: international understanding, friendship for the United States, economic and social development of other nations. The applicants themselves, on the other hand, are primarily personally oriented toward definite academic achievement and professional development." Whatever the emphasis of program sponsors, the fundamental goal of any exchange must be education. A satisfactory educational experience for each exchangee is essential to the achievement of any subsidiary goal of either the exchangee or the sponsor. Thus, understanding and liking for the United States, or for any other country, become a secondary objective of exchange programs, best achieved through indirect means.

To quote the Committee's conclusion: "Educational exchange programs are forging strong links in the chain of international co-operation—in terms of trained men for new

industries; of doctors specializing in public health and preventive medicine; of better-trained scientists in new laboratories; of better-informed journalists in countries around the world; of strengthened universities and educational systems. We need not ask for too much more. Exchange-of-persons programs, even in the cold light of realistic appraisal, are positive, constructive and indispensable attempts to move toward a wiser, safer, better world."

Statistics

RESEARCH on exchange of persons has become more fruitful as better statistics have become available on the educational exchange population. The Institute of International Education has contributed much to this work by its five annual surveys: of foreign students, professors and doctors in the United States, of U. S. students and professors abroad. The percentage of replies on these surveys has been encouragingly high. Future plans envisage the institution of surveys to obtain data on foreign trainees in the United States, on foreign and American industrial observers, and on foreign nurses in the United States.

This month (April) the Institute is announcing the establishment of a Central Index of Educational Exchangees. A roster of Americans who have gone abroad and foreigners who have come to the United States for educational purposes during the last 36 years, the Index now contains 212,696 names. It lists 19,365 U. S. citizens who have studied, trained, or taught in 120 foreign countries and political areas since 1919, and 193,331 foreign citizens from 151 countries and political areas who have studied, trained, or taught in the United States during the same period. Since no total figure on exchangees for this period is known, the exact degree of inclusiveness of Index data cannot be determined, but its files can provide to interested organizations and agencies vital information on exchanges between the United States and other countries which has previously been unavailable or obtained only with great difficulty.

The Central Index provides source material for research—"population samples" for evaluative studies of the effects of international educational exchange and figures for statistical analyses of the type and scope of such exchanges. The factor of American training in the education of foreigners, the relationship of national literacy to study or training in the United States, the scope of foreign study for Americans and the magnitude of exchanges in the

field of medical training, can all be indicated by an analysis of Index data.

Of assistance in program planning, the Central Index can provide information useful in determining methods for expansion of the field of international education. Assembled data will suggest areas of greatest need for exchange programs—both on a geographic and a field of study basis.

The Central Index is a reservoir of information on internationally-trained persons: of Americans who have had training abroad and of foreigners who have come to this country for educational purposes. It serves as a comprehensive roster of persons with international training and experience. For personnel identification the Index is of value to private American and foreign business firms with international interests, to international organizations, to educational and government agencies, professional groups, and educational institutions.

Public Support

THE value of broad public acceptance of exchange programs is clear, for these activities depend heavily on private contributions. Of the 34,000 foreign students in the United States last year, approximately one-third—over 10,000—were receiving some financial aid from private groups, agencies, or institutions.

Administrators of international education programs have come to realize the potential impact of educational exchange on the American community. As many diverse elements of the community have become involved in the exchange, the foreign visitor may be better satisfied in his experience here, and his visit may also be capitalized upon as an educational experience for U. S. citizens. In this two-way process, where cultural values are experienced and interchanged, there exists one of the real frontiers of international education.

The interaction between the foreign visitor and the Americans whom he encounters presents an unusual educational opportunity for the latter. George Kennan indicated the significance of this when he said recently: "However great the importance of international cultural exchange from the standpoint of our relations with other countries...this is not the main reason why we Americans have need for cultural contacts with other peoples at this time. The main reason lies rather in our own need as Americans for just this sort of enrichment of national spirit."

Following the rapid expansion and growth of international education after World War II,

exchange programs have reached a high plateau from which it is possible to look with profit at the path that has been followed, the place to which it has brought us, and what lies ahead. Exchange-of-persons programs have become an established part of the post-war educational picture in the United States as well as an important implement of the international cultural program of the U. S. Government. Public understanding, support, and participation are necessary for the success of this large and still expanding exchange movement. In order to cultivate and encourage public understanding as well as to improve existing programs, the process of refining exchange policies and procedures must continue. The results of research, the evidence of statistics must be brought to bear on program planning and definition of goals. In this way, exchange programs can become ever more effective in the accomplishment of the goals of individual exchangees and in the achievement of the general goals of organized exchange: economic and social development of nations, friendship for the United States, and international understanding.

Technical Digests

THE UNITED STATES office of the Organization for European Economic Cooperation is now distributing in this country a new monthly publication, "Technical Digests," containing summaries in English of selected articles culled from among 1,000 European periodicals. The material is primarily intended to inform technicians and engineers, working directly in production, of techniques, apparatus, and materials which can be applied in the factory to increase productivity.

The first of these monthly issues contains material on chemicals, ceramics and glass, electrical engineering, materials handling, metallurgy, and many other topics. Articles are digested by experts in countries of the original foreign publication and are edited in Paris by English editors.

As an additional service, subscribers to this journal will be able to obtain, for a small fee, reproductions of the original texts from which the digests were made.

("Technical Digests." European Productivity Agency. From: OEEC Mission Publications Office, 2000 P Street, N. W. Wash. 6.)

—*the people of NPA*—

Elmo

B.

Roper



Fabian Bachrach

The American public has been heard on a myriad of topics from tea to TV since Elmo Burns Roper, Jr., NPA trustee, began polling public opinion twenty-three years ago. Mr. Roper, also a Business and Steering Committee member, began market research with Cherington, Roper, and Wood in 1933. His own firm, Elmo Roper, became Elmo Roper and Associates in 1955 when his son and others joined him in partnership. A major aim of opinion analysis has been to get for business the public's reaction to products and services, but the Roper method of opinion sampling has been applied to problems in public relations, communications, labor relations, and national affairs, as well. Underlining the importance of this, the editors of "Fortune" said in 1942 that public opinion research has two jobs in defense of democracy—"to seek out the areas of national ignorance and to make the enlightened areas articulate." Born in Hebron, Nebraska, Mr. Roper attended the University of Minnesota and the University of Edinburgh. During World War II, he was an adviser to the Purchases Division of OPM; deputy coordinator of information, 1941-42; and, deputy director, OSS, 1942-45. He was research director of the "Fortune" Survey of Public Opinion, 1935-50. Mr. Roper is now a director of the Home Life Insurance Company; Spiegel, Inc.; and International Research Associates, Inc. In November 1955, he was elected president of the Atlantic Union Committee to succeed its founder, the late Associate Justice Owen J. Roberts. Knowledge of the extent and quality of the public's information means, Mr. Roper has said, that "the radio, the press, our educational system, our thought leaders as a whole may know where they have failed and where their immediate responsibility lies—not as propagandists, but as teachers."

U. S. Government

Participation in Cultural Exchange Programs*

The following Joint Statement was adopted by the National Planning Association's Board of Trustees and Standing Committees on Agriculture, Business, Labor, and International Policy at their Annual Joint Meeting December 12, 1955. In addition to Board and Committee members, the members of NPA's National Council, an advisory body composed of leaders in agriculture, business, labor, and the professions, were invited to endorse this Joint Statement. Of the total signers, 35 represent agriculture, 91 business, 32 labor, and 73 the professions.

SINCE WORLD WAR II, the question of what the people of other countries think about the United States has become a major concern to us. We have assumed heavy responsibilities for aiding in the defense and progress of other free countries. The success of our efforts depends not only upon other peoples' immediate reactions to specific American statements, actions and programs but also, more fundamentally, upon their *general* attitudes toward the United States—upon the picture which they have in their minds of the kind of people we are, and of the basic values and objectives which we hold dear. Likewise, the attitudes of the American people toward the cultures of other countries are an important factor in determining the kind of popular support at home which will be forthcoming for American foreign policy.

Thus, both in their nature and in their results, cultural exchanges are a two-way street. The better acquainted people are with each other's habits, abilities, and limitations, the more likely they are to be understanding and cooperative in their relationships with one another. Ignorance and misinformation breed intolerance, suspicion, and hostility. Better knowledge of one another will not automatically and by itself result in mutual understanding and friendliness, but it is one of the essentials of good relations.

Prior to 1938, the active encouragement of cultural contacts and exchanges was not generally regarded as a governmental responsibility in the United States and was left largely to private initiative and activity. Wartime and postwar conditions have changed this attitude and, over the past decade, the United States Government has operated a gradually expanding program of cultural exchanges between the United States and other countries. Their general objective was recently stated by President Eisenhower to be the delineation of "those important aspects of the life and culture of the people of the United States which facilitate understanding of the policies and objectives of the Government of the United States."

Exchange programs are now being operated in all

important cultural fields including the arts, the sciences, religion, education, human relations, and the like. Various techniques are used, such as the dissemination in other countries of American books and other printed matter on all subjects of interest or importance to their peoples; exhibitions abroad of American literary, artistic, and scientific achievements; foreign tours by American writers, lecturers, athletes, musicians and orchestras, dramatic and dance companies, and other similar activities; periods of study and travel in the United States for foreign students, teachers, specialists, and leaders; and periods of study and travel abroad for American students, teachers, and specialists. In addition, these programs endeavor to stimulate and assist private American individuals, groups, and institutions in undertaking their own cultural contacts, temporary or permanent, in other countries.

Along with the cultural exchanges of the United States directly with other countries, we should also like to stress the importance of American support of, and participation in, multilateral arrangements for such work through the United Nations Educational, Scientific and Cultural Organization (UNESCO), the Organization of American States, and other international agencies. The United States National Commission for UNESCO provides a continuing and useful instrument for support of and assistance to American participation in UNESCO.

Cultural exchange programs have entailed new and unusual activities for the United States Government, and the task of evolving effective organizational forms and operating methods has been a long and difficult one. Also, there is unavoidably a large element of subjective judgment—of personal taste, and aesthetic or intellectual preference—which enters into the choice of specific things, activities, and persons to be included in a particular program.

Inevitably, mistakes have been made and some waste and inefficiency have occurred. Over the years, there is no question in our minds but that these programs have yielded results which far outweigh their costs and the minor unintentional harm that may have resulted from inefficiency and mistakes in judgment. As knowledge and experience are accumulated, the quality of the cultural exchange programs should improve, and we have every confidence that, with sympathetic understanding and adequate support by the Congress and the American people, their effectiveness can be much increased.

* This statement is concerned only with the cultural exchange programs in which the United States Government participates in one way or another. While stressing the value of such officially sponsored or financed cultural exchanges, we do not wish to imply that they are in any sense a substitute for, or more important than, mutual defense assistance, economic aid, technical cooperation, informational exchanges, and other programs and activities of the United States Government designed to foster the protection and progress of other countries of the free world.

PERHAPS THE MOST notable achievement of our cultural exchange programs has been their contribution toward correcting the distorted picture, so prevalent abroad, of Americans as a people obsessed with materialistic values and material satisfactions. This distorted picture is the product not simply of propaganda by the communists and other anti-American elements. It is in large part the unintentional result of our own technological proficiency, of our expanding economic system geared to mass production for mass consumption, and of the role which our material wealth and power must play in the protection and progress of the whole free world. Moreover, it would be foolish to deny that unfavorable criticism of American culture as materialistic has a limited validity insofar as our creativity and our joy in work serve no better purpose than to satisfy the artificially stimulated whims of the American people for ever new models and more gadgets.

Nonetheless, American pragmatism, skill, and productive exuberance have other, and vastly more important, significance for the whole of human society. Our willingness to share our productive skills and material wealth freely with others makes them an indispensable means for achieving greater justice and welfare in the international community. If world population growth and consumption expectations both continue their explosive rise, the export of American skills and products may also be essential to enable many countries to provide their hungry peoples with the very bread of life itself.

While American material achievements thus have a positive and creative significance for the whole free world, there are nonmaterial qualities of American culture which are of even greater importance to human progress and which, indeed, are in large measure responsible for our material accomplishments. These are mainly in the cultural and human relations fields. Our ability to translate into practice our regard for freedom of thought, our belief in the equality of all before the law and in social and economic opportunities, our receptivity to new ideas, and our strong sense of friendliness and mutual help, are perhaps our most important nonmaterial assets. Today, these qualities yield the social cohesion and voluntary cooperation which make possible the largest functioning democracy in history. These qualities—and their fruits in artistic and intellectual achievements—are not well recognized abroad, and we can and should make them much more apparent to the people of other countries through effective cultural exchange programs and in other ways.

DRAMATIC EXAMPLES have occurred in the last few years of the favorable responses abroad to American artistic and intellectual products. Performances by the American Symphony of the Air (formerly the NBC Symphony) in several Asian countries have been enthusiastically received by large audiences and widely and approvingly discussed in the local press. The popular American opera *Porgy and Bess*

made a profound impression throughout Western Europe and the Near East. The *Salute to France*, which included musical, ballet, and dramatic performances by outstanding American artists, was one of the cultural triumphs of the 1955 Paris season, and did much to counteract the recent growth of anti-Americanism in France.

At the same time, Europeans, Asians, and Latin Americans visiting the United States under cultural exchange programs have been amazed to discover our flourishing "little theatre" movement, the hundreds of symphony orchestras active in smaller cities and towns throughout the country, the high quality and diversity of American painting, and the rapidly increasing participation of ordinary Americans in all kinds of amateur artistic activities. Similar responses on the part of foreign students, teachers, and intellectual leaders have resulted from their growing acquaintance under the exchange programs with American educational, scholarly, and scientific achievements.

What is important in these and other cultural contacts is not so much the admiration abroad for a specific American literary, artistic, or scientific product. Rather, it is the recognition by the peoples of other countries that, regardless of cultural differences, we too are animated by the same fundamental humanistic values as they are. It is awareness abroad of such shared basic values that largely creates the psychological receptivity needed for favorable responses to American foreign policies and actions. This sense of shared values will be strengthened not only through increasing knowledge abroad of the elite products of American culture but, more fundamentally, through the process by which Americans from all walks of life live and work with the ordinary people of other countries under our technical cooperation programs, and our private business and nonprofit activities of all kinds.

THE FACT THAT CULTURAL exchange programs have been contributing so notably to more sympathetic attitudes abroad toward the United States underscores their usefulness and significance. Hence, it is important that United States Government participation in this field be as effective as possible. Gains have been made in the last year in improving the content of these programs, and in reviving the courage and confidence of those who administer them. Further progress could be achieved by developments along the following lines:

- The United States Government has been conducting cultural exchange programs of one kind or another since 1938 and, under present and prospective world political conditions, it appears that such activities will continue to be desirable for the foreseeable future. Even if world tensions were to be significantly eased, there would still be justification for continued United States Government participation in cultural exchanges. A nation as conspicuous for its wealth and power as the United States, and one whose own economic and political developments have such

important impacts on other countries, inevitably places a much greater strain upon the good will of other peoples than does a nation which has lesser influence outside its boundaries, or one which merely follows a passive foreign policy. Hence, it is desirable that cultural exchange programs be planned for the long term and that increased financial support be provided for them.

At present, there is considerably more that could usefully be done than is permitted by the financial resources available for these purposes. Virtually every part of the general program merits steadily growing financial support. Cultural exchanges are an activity in which long-term efforts can have a cumulative impact, and on which comparatively modest expenditures can yield results worth many times their cost.

- Present United States Government programs do not adequately recognize that it is just as important for Americans to become more familiar with the cultures of other peoples as it is for them to become better acquainted with our own. True, Americans are travelling abroad in greater numbers today than ever before, and foreign—particularly European—music, ballet, drama, and art have always been heard and seen in this country commercially, or under the auspices of American museums and galleries. But, extensive as it may be, this American exposure to other cultures is, nonetheless, limited either to certain upper income groups, or to metropolitan areas in the United States, and generally involves only a limited number of cultures, notably the European.

It is also true that many foreign governments—again, mainly European—have their own cultural exchange programs, some of which long predate those of the United States Government. But, here again, the effects are limited not only because many of the Asian and Latin American countries do not yet operate such programs, but also because few, if any, foreign countries have sufficient dollars available for financing cultural tours and exhibitions in the United States.

Accordingly, various methods should be explored by which the United States Government could, when necessary, assist in making lower income groups and smaller cities and towns in the United States more familiar with a much wider variety of foreign cultural achievements, particularly those of Asian and Latin American countries. Official American support for such genuinely reciprocal cultural contacts would help to convince people of other countries that our interest in cultural exchanges reflects not only current world political necessities, but also a positive concern for others which antecedes—and we trust will outlive—the cold war.

- For many types of cultural exchanges, the best results can only be achieved through various forms of governmental-private cooperation, not only at the operating level, but also at the level of policy making and program planning. This is recognized by the administrators of cultural exchange programs. It would

be highly desirable to intensify their efforts to enlist private participation and initiative, particularly in the work of acquainting peoples abroad with American musical, dramatic, and artistic achievements. American musicians, orchestras, dramatic companies, and other performers cannot normally expect to earn enough through foreign tours to cover expenses, much less to yield even a modest profit. Thus, governmental help is indispensable to any increase in their very beneficial activities abroad.

Great ingenuity will be required to devise proper and effective forms of private participation in such government sponsored or financed activities if the freedom and creativity of private individuals and groups are to be preserved. At the same time, it is to be hoped that private foundations and other private sources of financing will increase their own support of worthwhile international cultural exchanges.

- Another aspect of our cultural exchange programs meriting increased support is the fostering of direct relationships of all kinds between American universities, colleges, and other institutions of learning and those abroad. Direct relationships established under the United States technical cooperation program in recent years have already yielded valuable results, and similar benefits could be obtained through more extensive use of such arrangements in cultural fields. Not only in continental Western Europe, but in many Asian and Latin America countries as well, students, teachers, writers, and other intellectuals play major roles as opinion-makers and political leaders. In the past, they have had too little knowledge of American achievements in the literary, artistic, and intellectual fields to which they are devoted, just as we have had too little acquaintance with theirs. Hence, many of them have tended to have contempt for American cultural capabilities, and *vice versa*.

Our present student, teacher, and specialist exchange programs are making important contributions to overcoming these mutual attitudes. But much more can and should be done along these lines, especially through American colleges and universities. In this, as in other types of private participation in cultural exchange programs, the major limiting factor is financial. It is to be hoped that appropriate ways will be found, and adequate funds provided, to enable the United States Government to assist American universities, colleges, and other institutions of learning to increase and intensify mutual relationships with similar institutions abroad, particularly in Asia, Latin America, and Africa.

- If American cultural exchanges with other nations of the free world are mutually valuable, such cultural contacts as are now, or may become, possible with the countries of the communist bloc may also yield beneficial results, though of a different kind. It would be worthwhile to investigate the possibilities of cultural contacts with the Iron Curtain countries, and to determine what role, if any, Government sponsored and financed programs should play in this field.

• In our view, cultural exchange programs might achieve considerable gains in effectiveness if operating responsibility were concentrated in one agency—probably the State Department. Several years ago, the United States information program was removed from the Department of State and established as an independent agency—the United States Information Agency (USIA). There can be little doubt of the wisdom of this step, for a successful information program requires the freedom, flexibility, and speed of operation usually to be found in a young, independent, and single-purpose government agency.

However, when the information program was removed from the State Department, certain cultural exchange activities went along with it, while others remained behind. In general, the USIA has responsibility for the exchange of things, such as books and pictures, etc., while the State Department handles the exchange of persons such as students, teachers, artists, and lecturers, even though both may be included in the same program. These agencies should restudy this division of functions to determine whether it is satisfactory, or whether greater effectiveness could be achieved by concentrating all cultural exchange activities in the State Department.

*Members of the National Planning Association
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CHASE STUDIOS
Clockwise from upper left: NPA chairman H. Christian Sonne; Arthur F. Burns, chairman of the Council of Economic Advisers; Alvin H. Hansen, professor of economics, Harvard University; and Senator Paul H. Douglas, chairman of the Joint Committee on the Economic Report, who were the speakers at the February 20th dinner sponsored by NPA to commemorate the Tenth Anniversary of the Federal Employment Act.

Automation Case Studies

THE RESULTS of orderly transition to automatic production processes through planning, amicable union-management relations, and proper timing with respect to economic conditions were reported for two firms by the Bureau of Labor Statistics and published as case studies in the fall of 1955. The reports describe the introduction of automation into a large plant manufacturing electronic equipment and into a life insurance company's classifications section where business operating statistics were prepared and running inventories on active insurance policies maintained.

The case studies, it is emphasized, are meant to be illustrative and are not necessarily representative of the problems encountered in the automation of these industries.

The first case study concerned Company Y, a manufacturer of TV sets. The communications equipment field of which it is a part is an

expanding industry which employed an average of 490,000 persons in 1954, mainly working in the metropolitan areas of Illinois, New Jersey, Pennsylvania, New York, and Massachusetts. There is a certain seasonal variation in production and hiring, the report states.

At Company Y, assembly line methods were employed with a considerable amount of job specialization and time-consuming hand assembly of many wires and small parts.

The introduction of greater automation at the factory took place in two steps. First was the substitution of printed circuits in 1952 eliminating certain hand wiring operations. Second, a machine was designed which would insert through holes punched in this board the components previously inserted by hand and soldered in place. The mechanical conveyor system in operation at present eliminates all but about 20 to 25 percent of the hand wiring, resulting in absolute quality control and in reduction of labor time and space.

The decision to introduce this automatic assembling process was made by the company in the spring of 1954. Production foremen were informed a couple of weeks in advance of introduction as were union officers. Workers, the report states, learned via the "grapevine."

No employee was laid off as a result of the new methods but there were other implications. The techniques were introduced at a time of model changeover and of employment expansion. In the second half of 1954, after automation, employment increased, slowed down seasonally in the first half of 1955, and turned up in August 1955.

New job classifications and new machine-tending jobs were created. Pay rates for the automation jobs, the report states, were set at 5 to 15 percent above straight time hourly rates for unskilled assemblers. "With greater productive capacity," the report says, "the company is seeking to improve its position in the electronic goods industry....Particularly noteworthy are its efforts to diversify production."

The report notes that the new methods apparently have been accepted by the workers as part of the normal process of shop changes. The agreement between company and union which became effective three months after installation of new production methods is to run two years, and made no mention of automation.

THE SECOND CASE study concerns the introduction of an electronic computer into the ABC insurance firm. Here again certain

favorable factors were present. These included an expanding volume of business; a shortage and relatively high turnover of the women clerks employed in the operations; and, easy transferability between the company's sections because of similarity of job requirements.

The company found that installation of the computer in this particular sector resulted in 50 percent savings. Personnel adjustments were handled carefully, and transfers were made to other assignments which required only brief on-the-job training. No job losses and no downgrading resulted, and those employees required in the computer work force averaged annual salaries higher than those working under the former conditions.

Other studies similar to these two case studies, some concerning the extent of industry application of types of automatic technology with its implication for employment, are planned for future publication.

("Studies of Automatic Technology." Nos. 1 and 2. From: U. S. Department of Labor, Bureau of Labor Statistics, Washington. October 1955. 20 and 18 pp.)

U. S. Agriculture in 1956

A RECENT NPA STUDY has revealed that the continuation of current trends in farm production and consumption means a steady increase in surpluses, which in a decade may amount to twice their present size. These trends were analyzed in a study prepared for the Agriculture Committee by Professors John D. Black of Harvard University and James T. Bonnen of Michigan State College. The study, "A Balanced United States Agriculture in 1965," assesses the adjustments needed to bring about a balance under which demand would just meet supply, and no subsidies or controls would be necessary except in time of crop failure, economic depression, or large wartime demand.

On the basis of current trends, however, the authors estimate an 8.8 percent surplus of farm products in 1965, compared to the 1955 excess of about 4 percent. They emphasize that consumption cannot be expected to catch up automatically with production because the use of modern methods and machinery tends to increase farm output at a faster rate than the growth of population. Even if the amount of

cultivated land and numbers of livestock remain unchanged, increased yields alone can be expected to raise production 21.3 percent by the goal year, they point out. Yet production, they estimate, ought to rise no more than 12.5 percent to balance an anticipated increase in consumption of 16.9 percent. Achieving this balance would require a 7 percent reduction in the present amount of acreage and livestock, entailing a cut of 5 percent in food grain and 13 percent in feed grain acreages.

In addition to over-all projections, the study takes up each of the major farm commodities individually, including wheat, rice, feed grains and forage, livestock and poultry, dairy products, cotton, wool, tobacco, fats and oils, sugar, fruits and vegetables, and eggs.

While the Committee makes no policy recommendations, the authors observe that the new technologies which are raising production so rapidly should not be abandoned. They suggest, instead, that they be applied to fewer acres of crops and fewer animal feed units. "In doing this," Professors Black and Bonnen specify, farmers "should cull out their poorest acres and divert these to more extensive uses requiring lower inputs per acre—from wheat to grass, from corn to hay and forage, from cotton and tobacco to corn and hay and forage. The livestock farmers need to cull their poorest cows, sows, and hens and the like. These changes will all reduce the expense side of their ledgers more than their receipts."

They conclude that "a further reduction in the number of farms, with more acres per farm, will increase their expenses in most cases much less than their receipts. We shall not have so many families on farms, but the somewhat smaller number will be much better off."

("A Balanced United States Agriculture in 1965," by John D. Black and James T. Bonnen. From: NPA, 1956. 32 pp. 35¢)

New President Elected

John S. Coleman, president of the Burroughs Corporation and a member of NPA's Business Committee, has been elected president of the U. S. Chamber of Commerce. Mr. Coleman succeeds Mr. A. Boyd Campbell, NPA National Council member who is chairman of the Mississippi School Supply Company.

Scientific Minds and Educated Men

APPREHENSION HAS percolated out of the factories and laboratories of this country where the informal checks of personnel offices have been pointing up a shortage of scientists and engineers. Since scientific manpower needs are growing daily, so too is widespread alarm at the shortage. Educators are interrogated about the failure to graduate more scientists, and parents are admonished to keep their children at work on mathematics. Yet above this clamor, there are other voices dolefully warning us that scientific education, vital basis for technological advancement, will turn out coldly disciplined specialists, denuded of sensibilities and "culture." They fear that the general introduction of scientific education will result in the death of humanism and of culture.

Dr. J. Bronowski, in an article, "The Educated Man in 1984," which appeared in a recent issue of "The Advancement of Science," quarterly publication of the British Association for the Advancement of Science, agrees that a challenge to culture has appeared. Stating that scientists are inheriting the earth, Dr. Bronowski says, however, that our problem is not to feed "culture" to the scientist. The way to avoid the possibility of dictatorial government, run by experts for the ignorant, is for our statesmen, our "humanists," and all our educated men to become at home in the methods of science.

Dr. Bronowski, who has given the Carnegie lectures at the Massachusetts Institute of Technology, asserts that the concept of culture and of the educated man must be re-examined in the context of a society permeated by science in which decisions of daily life and decisions of state alike require men to be articulate in a new vocabulary and conversant with new boundaries of space and matter.

The nonscientist, asked for a definition of culture, says Dr. Bronowski, will recognize culture in Mozart, in Michelangelo, and in Dante. Cultural education, he will understand, gives him the capacity to acquire a broad sense of the richness of civilization. On the other hand, the nonscientist will visualize scientific education as dull, factual training for a trade.

Dr. Bronowski points out that all subjects in the school curriculum started to be learned as useful vocational skills. Latin and Greek, for example, were first taught to clerks. There

are other subjects taught not for a single vocational purpose, but because their knowledge is fundamental to the whole life of an educated man. Dr. Bronowski suggests that English, arithmetic, history, and French moved in this way from the particular preoccupation of specialists to the broad use of the average man so that they have assumed a place in our culture. Science is inexorably moving to this position.

THE NONSCIENTIFIC public fails, Dr. Bronowski says, to comprehend the implication of simple mathematical concepts translated into practical terms. He quotes, for example, the first sentence of Winston Churchill's directive establishing the atomic bomb project in England: "Although personally I am quite content with the existing explosives, . . ." This innocent phrase of Churchill's he calls a line written by an intelligent man who did not grasp the bigness of a million. "The difference between atomic explosives and ordinary explosives is the difference between the length of a nuclear bond and a molecular bond; and this is a factor of more than a million. To suppose somehow that, in multiplying the energy of an explosive by a million, you are doing nothing very different from multiplying it by two, or five, or ten—this is simply not to grasp the scale of the world. And the public does not grasp it. To say 'ten to the sixth' to anybody today, however educated, is still to invite the reproof that one is stressing mere numerical detail. The nonscientist lacks such conceptions, and their lack cripples his judgment in the modern world."

Dr. Bronowski proposes four steps which should be taken immediately for the education of the nonscientist.

- Mathematics of a more practical kind should be introduced into school curricula with less stress on mathematical manipulation, and more translation from everyday facts into mathematics and back again. Statistical methods, he believes, should be required for everyone. Mathematics for the nonscientist should be less occupied with number and quantity and more with relations of order and arrangement.
- The atomic picture should be made central to the teaching of physics and chemistry much earlier. Dr. Bronowski states that it lends itself both to geometrical and to statistical thinking.



The dinner sponsored by NPA to commemorate the Tenth Anniversary of the Employment Act. Seated at the speakers' table were: John Miller, Sam Thompson, Wayne Chatfield Taylor, Ralph J. Watkins, Edwin G. Nourse, Ambassador Henrik de Kauffmann, Gabriel Hauge, Senator Paul H. Douglas, H. Christian Sonne, Arthur F. Burns, Alvin H. Hansen, Senator James E. Murray, Leon H. Keyserling, Joseph S. Davis, Rep. Henry O. Talle, Marion Hedges, Grover W. Ensley, and Gerhard Colm.

- More biological teaching should be provided, Dr. Bronowski insists, because a natural interest in biology on the part of most children makes it a logical approach to scientific thinking.
- Science, Dr. Bronowski feels, should be taught not as a collection, but as an evolution of knowledge. It will gain vividness of perspective, he says, for the nonscientist if linked with history, literature, and geography.

And "...most important," he says, "the evolution of science goes to the heart of the scientific method: for it shows at each step how the logical deduction from what seems to lie behind the known facts must be confronted with experience. We make an induction, we put the deductions from it to test, and on the results of the test we base a new induction. This to and fro between the logical and the em-

pirical is the core of the scientific method, which non-scientists never seize because they do not see science as a progress."

("The Advancement of Science," vol. xii, no. 47, December 1955. From: British Association for the Advancement of Science, Burlington House, London, W. 1)

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